Space Weather Forecast

Issued on Monday 13 January 2025 at 01:08 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate class flares. Slight chance of G1-G2/Minor-Moderate Geomagnetic Storms early Day 1 (13 Jan).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low during the last 24 hours with only occasional Common-class flares.

There are nine sunspot regions on the visible disc. A bipolar region in the northwest remains the largest and most magnetically complex group, but with further slight decay evident among the intermediate spots. Another bipolar region around centre disc is located in the northeast, remains a simple, mature region. Most of the other regions remain small and simple with limited overall change. However, a single large spot is now rotating into view around the northeast limb.

No Earth-bound CME's (coronal mass ejections) were observed during this period.

Solar Wind / Geomagnetic Activity: Solar winds have slowly declined through the period from 440km/s to 390km/s. The Interplanetary Magnetic Field was largely weak, with the north-south component, also weakly variable. Geomagnetic activity was mainly Quiet (Kp 1-2), with an isolated Unsettled (Kp 3) interval 11/1500-1800UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally Low, with a chance of isolated Moderate flares and a very slight chance of isolated Strong flares, mainly due to the moderately large sunspot region located in the northwest disc or any spots that rotate over the eastern limb later in the period.

Solar Wind / Geomagnetic Activity: Solar winds are now at background levels were they are likely to remain during Day 1 (13 Jan). There is a slight chance of a CME arrival early on Day 1, but this is highly uncertain due to coronagraph imagery gaps at the time. Fast winds from a coronal hole just west of centre disc are anticipated to bring some minor enhancement from early Day 2 (14 Jan).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Geomagnetic activity is expected to be mainly Quiet to Unsettled (Kp1-3) on Day 1 (13 Jan), but with a slight chance of G1 to G2 Minor/Moderate Storms should any CME influence be forthcoming (very low confidence). On Day 2 (14 Jan) activity is expected to increase to Unsettled to Active (Kp3-4) levels, following the onset of the fast winds from the aforementioned coronal hole, with a slight chance of peak G1/Minor Storm conditions. Activity is then expected to return to Quiet to Unsettled levels from Day 3 (15 Jan).

Energetic Particles / Solar Radiation: Solar radiation is expected to remain at background levels, with only a slight chance of rising in response to any notable flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	20	20	15	5
Strong	**G3**	No	5	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	30	40	40	40
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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